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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Andrew J. Wardrop

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EXAMINER

CHANG, EDITH M

ART UNIT

PAPER NUMBER

2637

DATE MAILED: 09/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 09/726,978	Applicant(s) WARDROP ET AL.	
	Examiner Edith M. Chang	Art Unit 2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 March 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 March 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## DETAILED ACTION

### *Response to Arguments/Remarks*

1. Applicant's arguments filed on March 14, 2005, have been fully considered but they are not persuasive.

#### Drawings

**Argument:** in FIG.2A, 1400 the computer may be configured to "calculate a frequency error produced by said mixer".

**Response:** In FIG.2A, the computer 1400 only receives signal/information from the oscillator 1600, the first and second frequency monitors (1100 & 1300) which in turn receive signals/information from GPS receiver 1500 and the first (1000) or second oscillator (1200). How does the computer calculate a frequency error produced by said mixer with only information provided by oscillators and GPS receiver? The disclosure of the drawing does not show the claimed features "a computer adapted to calculate a frequency error produced by the mixer of the downconverter.

**Argument:** in FIG.3A, 1400 the computer may be configured to "calculate a frequency error produced by the upconverter".

**Response:** In FIG.3A, the computer 1400 only receives signal/information from the oscillator 1600, the first and second frequency monitors (5100 & 530) which in turn receive signals/information from GPS receiver 1500 and the first (5200) or second oscillator (5000). How does the computer calculate a frequency error produced by the upconverter (700) with only information provided by oscillators and GPS receiver? The

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disclosure of the drawing does not show the claimed features "a computer adapted to calculate a frequency error produced by the upconverter.

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, *the computer adapted to calculate a frequency error produced by the mixer of a downconverter and the computer adapted to calculate a frequency error produced by the upconverter* must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner,

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the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

3. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered dependent claims 17 to 21 have been renumbered as Claims 18 to 22.

4. Claims 18 to 22 are objected to because of the following informalities:

Claims 18 to 22, line 1: "The apparatus of claim 16" should be "The apparatus of claim 17".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-16 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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In claim 1 & claim 12, there is in no connection between the composed elements, the downconverter, the analog-to-digital converter, the digital receiver, and the digital demodulator to clearly indicate how does the computer calculate a frequency error produced by the mixer, while the computer receives only the signals from the oscillators, for digitally compensating the reception of radio frequency signals.

In claim 2 & claim 17, there is in no connection between the composed elements: the digital modulator, the digital-to-analog converter, and the upconverter to clearly indicate how does the computer calculate a frequency error produced by the mixer, while the computer receives only the signals from the oscillators, for digitally compensating the reception of radio frequency signals.

Claim 12, lines 1-2: "the reception of radio frequency signals" lacks antecedent basis.

Claim 18, line 2: "the downconverter" lacks antecedent basis.

Claims 3-6, 7-11, 13-16 are dependent on the rejected claims 1, 2 and 12.

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips et al. (US 6,307,877 B1) in view of Phillips et al. (US 5,867,535) and Dunlop et al. (US 5,528,199).

Regarding **claims 1 & 2**, In FIG.1, Philips et al. discloses a programmable mobile modem comprising: a *modulation 203 (as the up converter)* converting the IF signal from the D/A 209 to RF signal (column 13, lines 62-64 & lines 65-66); a demodulation 205 (*as the down converter*) converting the received RF signal to the A/D 207 to IF signal (column 13, lines 63-64 & line 65), wherein the up/down converter performs converting the IF signal to/from RF signal by a *mixer* (as suggested/shown in FIG.2 UPCONV. 210 and DOWNCONV. 212) and receive clock signals from the reference clock (*oscillator*) 213 (column 13 line 66-column 14 line 1); *A/D converter 207 and D/A converter 209*; a PMCM DSIC 202 inputting and outputting IF signals to and from the A/D 207 and D/A 209 as shown in FIG.2, the receiver subsystem 211 (as the *digital receiver*) with the *NCO 232* or the transmitter subsystem 1000 (as the *digital transmitter*) with the *NCO 230* with CORCI algorithm executed/set by the DSP processor show in FIG.3 (column 14, lines 17-20); and receive a clock signal from the reference clock 213 (column 14, lines 1-2); and a DSP processor 204 (*a computer*) receiving the signals from the clock gen. subsystem 214 (FIG.2) and executing *the error correction* functionality (column 5, lines 43-47).

However, Philips et al. does not specify the frequency monitor and the A/D driven by a different oscillator frequency (a second oscillator).

With respect to the frequency monitor, in FIG.1, Dunlop et al. teaches a circuit to establish and maintain the output frequency of an oscillator (column 1 lines 15-18). As the reference clock providing the clock frequency signals or frequency synthesizers providing the frequency signals in Philips et al.'s system, at the time of the invention was made, it would have been obvious for one of ordinary skill in the art to have the circuit (frequency monitor) adapted to measure the frequency of the oscillator taught by Dunlop et al. in the Philips et al.'s reference clock and frequency synthesizers to have a low-power-dissipation circuit for automatically establishing and maintaining the output frequency at a prescribed value (column 1 lines 15-23).

With respect to the A/D driven by a different oscillator frequency (a second oscillator), Phillips et al. teaches an oscillator 120MHz (with the *frequency monitor*) reference to the A/D converter and an oscillator 40MHz (with the *frequency monitor*) to the digital processing portion. As Philips et al. suggests four synthesizers: sampling and carrier frequency synthesizers (column 15, lines 40-44 '877). The sampling synthesizer 214b and 214b (the *second oscillator*) generate the adjustable over-sampling clocks, while the carrier frequency synthesizers (the *first oscillator*) generate carrier waveforms at an IF (column 15, line 44-48 '877), at the time of the invention was made, it would have been obvious to have the sampling synthesizer applied to the PMCM (the digital processing portion) and the carrier frequency synthesizer applied to the A/D converter portion taught by Phillips et al. ('535) to have a flexible synthesizers to save space and power of the system (column 15, lines 41-43 '877) .



Regarding **claims 3 & 7**, In FIG.6, Philips et al. discloses an antenna 528 coupled to the down converter 530; and an antenna 526 coupled to the up converter 524.

Regarding **claims 4 & 5**, In FIG.5, Philips et al. discloses the downconverter and the receiver are configured to provide and select a plurality of radio channels a and b (column 2, lines 62-67).

Regarding **claims 6 & 11**, in FIG.2, Philips et al. discloses that the spreading and correlating PN code of the RF signal supporting GPS code (column 14 line 66-column 15 line 2), hence the RF signals of Philips et al. system are GPS signals.

Regarding **claim 8**, in Fig.3, Philips et al. discloses the NCO 320 or 232 of FIG.2 configured to receive the signal from the processor ARM6 (as the computer) via ARM interface 314 to convert the IF signal to correlation & noise estimation or to D/A for transmission.

Regarding **claims 9 & 10**, in Fig.2, Philips et al. discloses the transmitter subsystem 1000 (the digital transmitter) outputting a digital IF at D/A IF SIGNAL to the D/A to convert to an analog signal provided to the subcarrier modulation 203 (the upconverter) for converting the analog signal to RF signal at TO RF PART (column 13, lines 65-66), wherein the modulator 203 provides a RF signal.

9. Claims 12-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Philips et al. (US 6,307,877 B1) in view of Dunlop et al. (US 5,528,199).

Regarding **claims 12 & 17**, In FIG.1, Philips et al. discloses a programmable

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mobile modem comprising: a reference clock 213 (the oscillator) providing the clock signals; a *modulation 203* (as *the up converter*) converting the IF signal from the D/A 209 to RF signal (column 13, lines 62-64 & lines 65-66); a demodulation 205 (as *the down converter*) converting the received RF signal to the A/D 207 to IF signal (column 13, lines 63-64 & line 65), wherein the up/down converter performs the IF signal to/from RF signal by a *mixer* (as taught in FIG.2 UPCONV. 210 and DOWNCONV. 212) and receive clock signals from the reference clock 213 (column 13 line 66-column 14 line 1); *A/D converter 207 and D/A converter 209*; a PMCM DSIC 202 inputting and outputting IF signals to and from the A/D 207 and D/A 209 as shown in FIG.2, the receiver subsystem 211 (as the *digital receiver*) with the NCO 232 or the transmitter subsystem 1000 (as the *digital transmitter*) with the NCO 230 with CORCI algorithm executed/set by the DSP processor show in FIG.3 (column 14, lines 17-20), and receive clock signals from the reference clock 213 (column 13 line 66-column 14 line 2); and a DSP processor 204 (a *computer*) receiving the signals from the clock gen. subsystem 214 (FIG.2) and executing *the error correction* functionality (column 5, lines 43-47).

However, Philips et al. does not specify the frequency monitor. In FIG.1, Dunlop et al. teaches a circuit to establish and maintain the output frequency of an oscillator (column 1 lines 15-18). As the reference clock providing the clock frequency signals or frequency synthesizers providing the frequency signals in Philips et al.'s system, at the time of the invention was made, it would have been obvious for one of ordinary skill in the art to have the circuit (frequency monitor) adapted to measure the frequency of the oscillator taught by Dunlop et al. in the Philips et al.'s reference clock and frequency

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synthesizers to have a low-power-dissipation circuit for automatically establishing and maintaining the output frequency at a prescribed value (column 1 lines 15-23).

Regarding **claims 13 & 18**, In FIG.6, Philips et al. discloses an antenna 528 coupled to the down converter 530; and an antenna 526 coupled to the up converter 524.

Regarding **claims 14 & 15**, In FIG.5, Philips et al. discloses the downconverter and the receiver are configured to provide and select a plurality of radio channels a and b (column 2, lines 62-67).

Regarding **claims 16 & 22**, in FIG.2, Philips et al. discloses that the spreading and correlating PN code of the RF signal supporting GPS code (column 14 line 66-column 15 line 2), hence the RF signals of Philips et al. system are GPS signals.

Regarding **claim 19**, in Fig.3, Philips et al. discloses the NCO 320 or 232 of FIG.2 configured to receive the signal from the processor ARM6 (as the computer) via ARM interface 314 to convert the IF signal to correlation & noise estimation or to D/A for transmission.

Regarding **claims 20 & 21**, in Fig.2, Philips et al. discloses the transmitter subsystem 1000 (the digital transmitter) outputting a digital IF at D/A IF SIGNAL to the D/A to convert to an analog signal provided to the subcarrier modulation 203 (the upconverter) for converting the analog signal to RF signal at TO RF PART (column 13, lines 65-66), wherein the modulator 203 provides a RF signal.

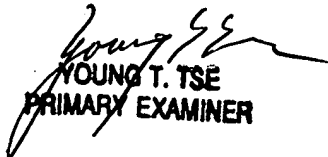
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10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M. Chang whose telephone number is 571-272-3041. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay K. Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edith Chang  
September 12, 2005

  
YOUNG T. TSE  
PRIMARY EXAMINER